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**Decision Making Analysis:
Critical Factors-Based Methodology**

By

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Abstract

For planners and leaders to formulate plans in dealing with adversaries, at least a basic understanding of their decision-loop is necessary. This paper seeks to answer two basic questions in furthering the debate over decision-making analysis. The question is whether the time and effort required for such analysis leads to any tangible benefit and if it does, then what model might lead planners to a viable understanding of an adversary. Mirror-imaging, stereotyping, and other errors commonly lead to false assumptions leading to equally faulty solutions. Increased emphasis on decision cycles during mission analysis is necessary in order to reduce as much as possible the fog of war. This paper recommends a construct based on Dr. Strange's critical factors analysis for conducting a decision cycle analysis. This paper is an attempt to begin discussion on models useful to planners with relatively little international-relations experience who are still required to make such decisions.

Background

The Joint planner makes assumptions as to an adversary's expected actions with no realistic basis for such a determination. In the best case, planners may have access to subject matter experts who have an informed opinion on expected outcomes however, planners usually rely on nothing more than personal experience, stereotypes, or rudimentary research in reaching their conclusions. The sole purpose for the Joint Operational Planning Process (JOPP) is to provide the JFC a generic, logical process that is usable at all levels of planning and allows the JFC to operate inside the decision cycle of the adversary.[1] JP 5-0 goes on to state, "a proper analysis of adversary critical factors must be based on the best available knowledge of how adversaries organize, fight, think, make decisions, and their physical and psychological strengths and weaknesses."[2] Finally, JP 2-01.3 "Joint Intelligence Preparation of the Operational Environment" speaks to the cognitive dimension in which "people think, perceive, visualize, understand, and decide."[3] A commander's psychological characteristics, personal motivations, and training will affect these activities. It is in this arena when decision-making models may provide useful information as to an actor's expected actions. **A thorough understanding of decision-making methods coupled with a framework for how to affect those methods can provide avenues for affecting belligerent actors.**

This premise applies at all levels of war as national leaders seek to influence other national leaders, Combatant Commanders seek to influence their belligerent counterpart, and tactical commanders seek to convince other tactical commanders to either cease fighting or commit unrecoverable tactical errors. The range of desired outcomes in decision-making include forcing a decision favorable to friendly aims, preventing a decision counter to friendly aims, or forcing the enemy into a state where he is unable or unwilling to make a decision. By analyzing

and classifying a state's decision-making process, policy-makers can identify decision-making Centers of Gravity where the proper type of influence can either disrupt or alter the opposing decision-making cycle.

While most of this analysis would ideally involve area experts with supporting agencies responsible for continued in-depth over-watch, planning realities finds many of these planning actions divested to lower echelons without ready access to such experts. These cases force lower echelon planning staffs to make best guesses with all of the cognitive biases associated with such guesses. During the Operational Design phase of operational planning, planners will formulate courses of action informed by a better understanding of how friendly actions might influence other actors. Later in the planning cycle, this analysis enables realistic wargaming, avoiding many of the pitfalls associated with current wargaming methods such as assuming a western view of rational values in decision-making regardless of the cultures involved. Further, during execution, such an analysis provides a basis for measures of effectiveness as changes to decision methods become apparent.

Although decision-analysis modeling will never be an exact science, in an era of low-intensity operations in which public sentiment is the primary friendly center of gravity, a thorough understanding of the enemy's decision apparatus is critical throughout the planning process. From determining centers of gravity during mission analysis to realistic and informative wargaming and course of action selection, the closer a planner gets to a realistic set of adversary decisions, the fewer changes to operations plans will be required thus mitigating a large source of friction in wartime.

Decision-making analysis is not a new concept. Since its inception in the 1970's, the CIA has continued to operate an office of leadership analysis focused on analyzing world

leaders.[4] Most work in this field from the mid-1950s through the 1990s focuses on decision-making analysis in a context broader than military-planning decision making and focuses on national decision-makers in an international relations context. In her book *Foreign Policy Analysis*, Valerie Hudson divides the study of foreign policy analysis into three generations of study. The first generation spans from 1954 through 1973 and generated many new concepts along with data collection and methodological experimentation.[5] The second generation, spanning the years 1974 – 1993, brought about many classic ideas such as theories on groupthink and other small group dynamics, expanded to explore the use of analogies to guide policymakers, and goes on to introduce rational and cognitive decision models.[6] Finally, the fall of the Soviet bloc demonstrated that, in the case of closed societies, policy analysis had to expand beyond traditional system-level analysis and explore "actor-specific" influences such as individual personalities, transnational and international actors, as well as internal struggles in order to form a more complete picture.[7] This actor-specific field of study forms the bulk of third generation study.

Most studies during Hudson's first and second generation of foreign policy analysis ended in inconclusive or disproven premises because they largely sought to predict finite actions resulting from a perceived decision process.[8] Researchers attempted to boil such analysis down to a matter of definite cause-effect relationships whereby exerting influence on a specific actor would produce high-confidence results most of the time. Where many of these studies fell short is that human response to stimuli is rarely an exact science. According to Dillon, "early researchers were consumed with producing descriptive theories for which all observed decision making could be described. . .In addition these theories were purported only to be able to predict the chosen alternative rather than describe the process."[9] Much of the uncertainty behind these

studies is the lack of current, relevant information due to a combination of closed societies, security classification, and disinformation in open sources.[10] Military planners will find their analysis increasingly reliable due to access to current verifiable information.

Decision-Making Models

Before examining a process for analysis, we must understand common decision-making models. As we progress through the analysis, it is important to note that states may have a characteristic decision-making process and individual actors within that process may have independent predilections. International relations theories have shifted from "the Great Man" approach during the 1930's when strong leaders such as Ghandi, Franklin Roosevelt, Stalin, and Hitler exerted great influence within their sphere of control to Cold War theories based on state-level decision-making systems.[11] Finally, post Cold War analysis revolving around crisis in Iraq and North Korea has shifted back to individual actors as the primary motivator behind state decisions.[12] Goertz posits that individual leaders choose the social and institutional norms with which they identify and therefore considers "the individual" consisting of the entire decision-making body, whether that be one person or a group of people.[13] By accomplishing an in-depth pattern analysis, the size of the decision-making apparatus becomes clear. The level of scrutiny will depend on the level of influence desired. Many studies present numerous decision-making models which generally present a blended solution of two basic models; rational and cognitive. Further research into these basic models yields numerous other models such as prospect-theory, utility theory, poly-heuristic, cybernetic, and bureaucratic. Each of these incorporates a blended approach of both primary models. Each of these models can at best fulfill a 'most likely' standard in predicting specific outcomes.

Rational Models

The first model to explore is the rational model. This model is the basic realist model that balances risk versus reward or cost versus benefit. This theory requires "a consistent and transitive preference order and the selection of the preferred alternative" with no other assumptions.[14] This model became the predominant international relations paradigm in the 1990's and continues to drive most Western ideas on decision-making process.[15] Utilization theory slightly expands the rational decision making model as it states that "actors try to maximize their expected utility by weighing the utility of each possible outcome of a given course of action by the probability of its occurrence, summing over all possible outcomes for each strategy, and selecting that strategy with the highest expected utility." [16] Levy argues that both of these models fall short as evidence suggests that people tend to overvalue losses, undervalue gains, and tend to apply risk calculations asymmetrically in response to changes from the status quo.[17] This dovetails with Goertz's argument that individuals self-identify with a certain set of norms and deviation from those norms invokes sanctions thereby reinforcing the status quo.[18]

Prospect theory forms the next iteration in rational actor modeling. Prospect theory attempts to factor probability into a utilization strategy. Under this theory, an actor establishes a reference point, or status quo, then evaluates available options, the outcomes of each option, the value of each outcome, and the probability that each will occur.[19] The Cuban missile crisis provides a case study in the use of this theory. If Soviet leaders established their reference point before the missile installation, they may have withdrawn the missiles as a return to the status quo thereby removing the uncertainty of escalated confrontation with the US.[20] This example also highlights a key limitation to this theory, as it is difficult to determine what the other actor uses

as a reference point. If Soviet leadership established a new reference point as possessing nearly

operational missiles in Cuba, then, with US assurances to withdraw missiles from Turkey, the

Soviet withdrawal could be viewed as a Soviet victory.[21]   Even in hindsight, without perfect

knowledge on the motivations and mindset of Soviet leadership, exact cause-effect relationships

are impossible to establish.

Cognitive Models

Cognitive models "tend to privilege the role of process over outcome, focusing on how

framing, beliefs, schemata, and (among other things) information processing influence decision

making."[22] Cognitive models focus on analyzing the amount of information that a decision-

maker processes, how much attention the individual gives to that information, and the choice that

the decision-maker ultimately makes.[23] The information presented to a decision-maker possesses

four characteristics affecting the outcome of the decision process: valence, relevancy, reliability,

and redundancy.[24] A decision maker's belief system directly affects their processing of

information within these four characteristics. For example, a leader that believes air power can

be decisive in any context may consider any evidence to the contrary as irrelevant or unreliable.

Although this model does explain some of the inconsistencies of a rational-choice model, this

model falls short in scenarios of varying stress, time factors, and explaining differing

interpretations of information.[25] Another major criticism of this model is that not all societies

permit a single actor to exert sole decision authority. Even dictatorships are subject to influence

from business or other political leaders.

The Bureaucratic decision model seeks to remedy these criticisms by applying the basic

tenets of the cognitive model over a range of inter and intra governmental actors. In the

Bureaucratic model, actors with governmental influence bargain in order to define what is in the

national interest. Allison's theoretical government is comprised of individual actors with independent self-interests and these individuals pursue policy decisions to ensure personally positive outcomes.[26] According to Allison, ''to explain why a particular formal governmental decision was made, or why one pattern of governmental behavior emerged, it is necessary to identify the games and players, to display the coalitions, bargains and compromises, and to convey some feel for the confusion.''[27] This model examines the myriad micro-decisions that inform those individuals with influence over the next level on decision-makers in the political hierarchy. This analysis presents an exponentially increasing workload for analysts due to the growing numbers of individuals with access at each lower level of decision-making.

Polyheuristic Models

Alex Mintz offers four items to categorize the decision-making behavior of political leaders which tend to demonstrate either a rational or cognitive leaning. Leaders that seek to maximize utility, adhere to a holistic analysis, capable of detailed calculations, and an ability to ignore undue influence by framing effects, tend to adhere to a predominantly rational process. Conversely, leaders that seek merely to satisfy utility, utilize a non-holistic analysis, overly rely on heuristics, and are influenced by framing effects tend to adhere to the cognitive model.[28] These types of leaders are accused by western standards of being irrational due to their tendency to place greater value in ideas and norms over evidence. As Mintz goes on to explain, leaders are not bound to a specific decision-making model nor do they necessarily adhere to a single model for a single circumstance.[29] Presented a list of solutions, a leader may rule out several solutions based on cognitive biases and then utilize a rational model to determine the final solution.

Research shows that the mind can only process between five and nine units of information at a time.[30] Therefore, in complex scenarios, decision makers tend to rely on personal experiences to fill information gaps, also known as a heuristic decision-making model.[31] In fact, most decision-makers employ a hybrid methodology in which they initially rule out a set of options based solely on experiential rulesets (or heuristic model) and then the remaining outcomes evaluated based on rational methods. This heuristic, cultural mindset determines which outcomes to consider and may lead a western observer to conclude that a decision maker with differing cultural bias has arrived at a non-rational outcome.

Framework for Analysis

Mintz raises five issues that provide a framework for military decision-making analysis. His issues are that:

1) no decision is possible without a decision rule;

2) decision rules and strategies affect choice; the use of different decision rules (analytic, cybernetic, or cognitive) or "mixed strategies (such as cybernetic) are likely to influence outcome;

3) the way issues are framed and counterframed is likely to influence outcomes;

4) rules of aggression affect choice;

5) comprehensiveness of the decision-making process affects outcomes; and

6) the order in which information is processed will affect outcomes.[32]

These issues provide clues for analysis as well as potential vectors for influence discussed later in this paper.

Dr. Joe Strange developed a targeting methodology, later modified by Dr. Jack Kem, based on targeting critical vulnerabilities.[33] This decision-making analysis closely follows Dr.

Kem's critical vulnerabilities methodology with some minor modifications in key terms. For this analysis, the center of gravity is always the decision cycle of the person or group that wields the most influence. Critical capability translates to the amount and type of influence that this decision-maker possesses. Critical requirements are the things that the leader needs in order to wield influence. Examples include popular support and access to reliable information. The most lacking of these requirements are considered critical weaknesses and may or may not be vulnerable to attack but will certainly inform an analysis into critical vulnerabilities.[34] Finally, critical vulnerabilities are those areas where some level of influence may change the behavior of the belligerent actor.

Identify Centers of Gravity and Their Critical Capabilities

The first step in analyzing a decision-making process is to determine who the primary decision-makers are as well as the level of influence that they are able to exert. This analysis will involve several inputs that will vary based on the social structures present in a given environment. The output of this step may be a wire diagram including some type of weighted coding to mark the type and level of influence a leader may have.
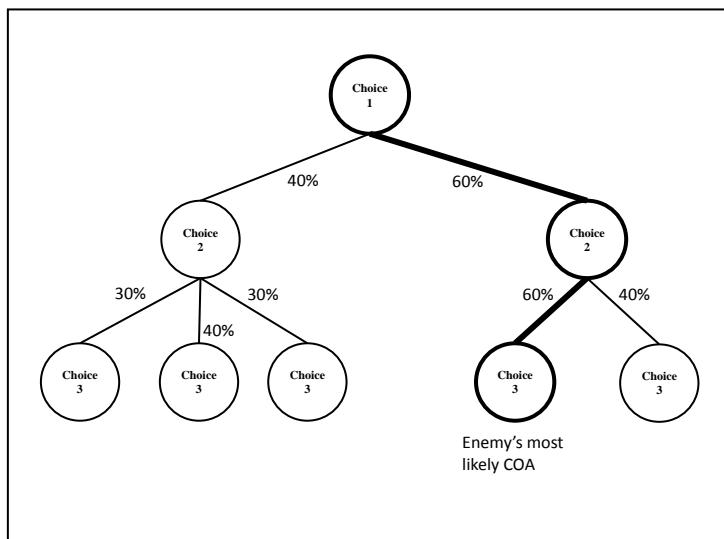
Inputs to this level of analysis focuses on published policy which may or may not be in the public domain. Constitutional powers, court rulings, and executive orders are examples of sources of such

Figure 1: Weighted Decision Matrix

information. This information is normally found in the public domain in established modern societies. Conversely, in evolving and isolationist societies, this information may be more difficult to determine. Even in established and open societies, some executive orders concerning lines of responsibility and authority may not be available for analysis. In these cases, a behavioral analysis may lead to some conclusions. For example, in country X, a secluded and secretive society with a small cadre of publicly available business and political leaders, observations of common interests and supporting actions between these leaders may provide a level of influence analysis. If a certain business leader publicly announces support of one position, and the country's leadership later endorses the same position, planners may cautiously determine an elevated level of influence from this leader. This type of analysis is also useful in open societies in order to confirm that social interactions occur in accordance with published directives.

It is important in this level of analysis to look not only at strictly political leaders, but also to determine influence-wielders throughout the society. These sources of influence may include civil leadership, military leadership, religious, business, and even the population may all possess significant elements of influence. Output from this level of analysis should reflect not only primary actors in the decision process but also areas in which those individuals (or group) are able to exert influence.

Identify Critical Requirements

The next step is to determine any key advisors to the primary decision-makers. These advisors may not always be the leaders' immediate subordinates. Past business partners, religious leaders, etc may continue to exert considerable influence. This step is not exclusive to people as advisors. Many religiously influenced societies include the Koran, Bible, or other

religious documents to inform a leader's decision. Planners must take measures to resist

projecting their individual interpretations of such sources and heed the interpretation of the

leader in question. The apparent contradiction between traditional Muslim interpretations of

segments of the Koran versus the radical Islamic interpretation of the same text is a prime

example.

Determine Critical Vulnerabilities

Critical vulnerabilities involve areas where an actor is vulnerable to influence. Factors

such as predominant decision-making model, religious biases, or educational background are all

examples of potential weaknesses. Hudson presents a diagram (Figure 2) of the mind model

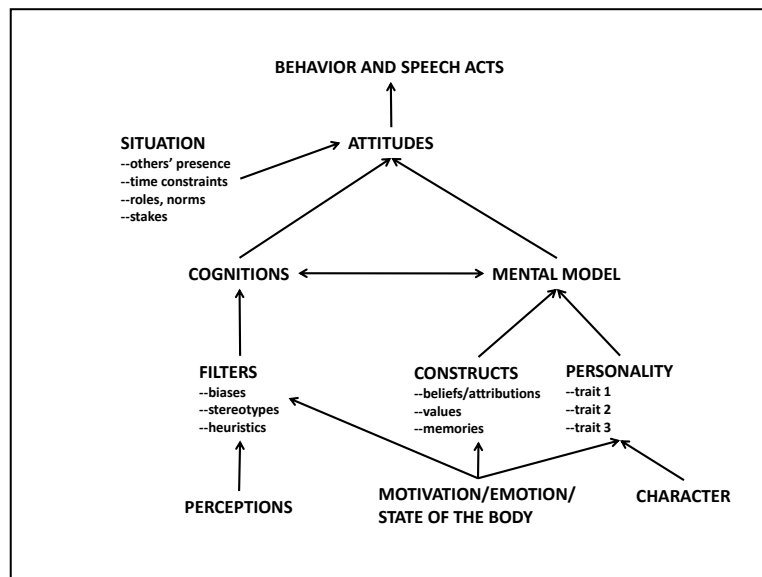highlighting many areas for analysis.

The mind model presents two primary categories for influencing a decision-maker: affect the situation or affect attitudes. The situation is marked by elements of stress that friendly forces can exact on an adversary. By using information operations or other visible activities, friendly

Figure 2: The Mind Model

forces can present real or perceived time constraints or adjust the real or perceived stakes in a

conflict. Flexible deterrent options enable the US government to exercise these options in

conjunction with other instrument of national power.

Influencing the attitude of an adversary is difficult in short-term operations due to deeply engrained biases of most leaders. There are, however successful examples of such operations.
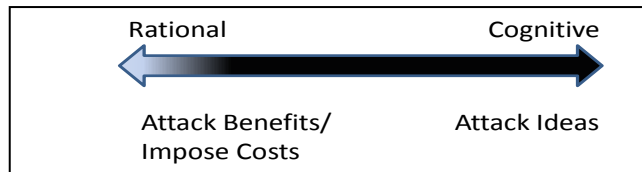
Rational ← Cognitive

Attack Benefits/Impose Costs   Attack Ideas

Figure 3: Attack Mechanisms

Operation El Dorado Canyon provides an example of threatening Col Gaddafi's "motivation/emotion/state of body" which, at least overtly, changed his beliefs and heuristics on the efficacy of terrorism thereby demonstrating a marked change in both his cognitions and mental model. An effective analysis will identify general tendencies in the leader's decision process. Goertz discusses the difference between international sanctions and domestic sanctions implying that actions the violate international norms will incur international sanctions but domestic norm violations are not immune to domestic sanctions.[35] This idea provides a mechanism for attacking an adversary in response to their particular decision process. A rational actor might be subjected to what Goertz suggests are international forms of sanctions using various instruments of national power. Conversely, a cognitive-leaning decision-maker may be susceptible to domestic sanctions such as loss of support from the people or key supporters by demonstrating a violation in local norms.

The cognitive approach offers several potential avenues of influence. The human mind, due to its limited short-term memory capabilities uses rules to conserve cognitive power. These rules consequently mean that most humans are notoriously bad at probability and processing evidence. Low probability events that happen with near-term frequency are assigned higher probabilities. Planners may exploit this by publicizing a series of high-value targets and convincing the decision-maker that they are in imminent danger thereby affecting both the decision maker's cognitive and situational paradigm.

Influencing individual traits of a leader may prove to be a low payoff effort, however, not one that a planner should overlook. President Bush, during the run up to Desert Storm, intentionally mispronounced Saddam Hussein's name in an effort to distract the former Iraqi dictator. Whether this had any appreciable effect is undetermined however, it is feasible that other leaders may possess certain characteristics susceptible to influence.

Case Study

This case study focuses on the government of Iran following the critical factors analysis model presented above and presents some considerations and examples on how to employ the critical factors analysis. This analysis is not an exhaustive analysis and is limited to open-source reporting.

Center of Gravity/Critical Capabilities

Clerical elites are the primary rulers of Iran. The Supreme Leader rules through the forced support of these elites. The Iranian Constitution grants certain powers to governmental entities and positions while ensuring that power remains with this circle of clerical elites. Iran's constitution delineates eleven broad powers possessed by the Supreme Leader to include: supreme command of the armed forces, declaration of war and peace, appointment of members of the Guardian Council, supreme judicial authority, head of the radio and television network, formalizing the election of the President (after the Guardian Council certifies the candidate is suitable), and dismissing the President. In short, the Supreme Leader holds absolute power over the executive, judicial, and legislative bodies of government as well as the armed forces and media outlets.

The office of the President acts as head of the executive branch. Most of his duties are subject to the oversight and approval of the Islamic Consultation Assembly. This Assembly forms the executive branch of government and enacts laws. These laws are subject to the Guardian Council that comprises six people appointed by the Supreme Leader and six people elected by the Consultative Assembly. Finally, a jurist appointed by the Supreme Leader heads the judiciary. The Council designs the Grand Strategy for the Iranian regime, and proposes guidelines for foreign policy.

From this Center of Gravity analysis, the Supreme Leader represents the single source of power for the government of Iran. This Theocracy grants the Supreme Leader control over all branches of government as well as the military. The lesser offices within the government may provide an avenue for influencing the decisions of the Supreme Leader.

Critical Requirements

Although the Ayatollah retains ultimate authority in Iran, many government and non-government participants influence his decision process. These individuals help the Supreme Leader define the identity of Iran in the Islamic world. These advisors are divided among two predominant groups, one clings to traditional Islamic ideals which underlie the Islamic Revolution in Iran and the second promotes Iran as a participant in international politics, emphasizing trade and political ties as integral to achieving Iran's national interests. An example of competing Iranian goals lies in Ayatollah Khamenei's 2002 statement that "America is basically opposed to the Islamic Republic and if it makes a move, it is tactical and deceitful ... so do negotiations have any meaning?"[36] Despite this public statement, reformists have sought to mend ties with Washington, while conservative members of the Expediency Council argue that relations with the U.S. would betray tenets of the twenty-three year old Islamic Revolution.[37]

Sources of foreign policy guidance range from diplomatic advisors via Iranian embassies and the Iranian Foreign Ministry, security agents, media sources, libraries abroad, individual citizens from various countries, and think tanks and scholarly authorities.[38] Figure 4 and its explanation, borrowed from Abbas Maleki, shows the relationship of the key influential parties in Iranian politics:

Diagram (2): Iranian Foreign Policy Decision Making
Abbas Maleki, March 2002
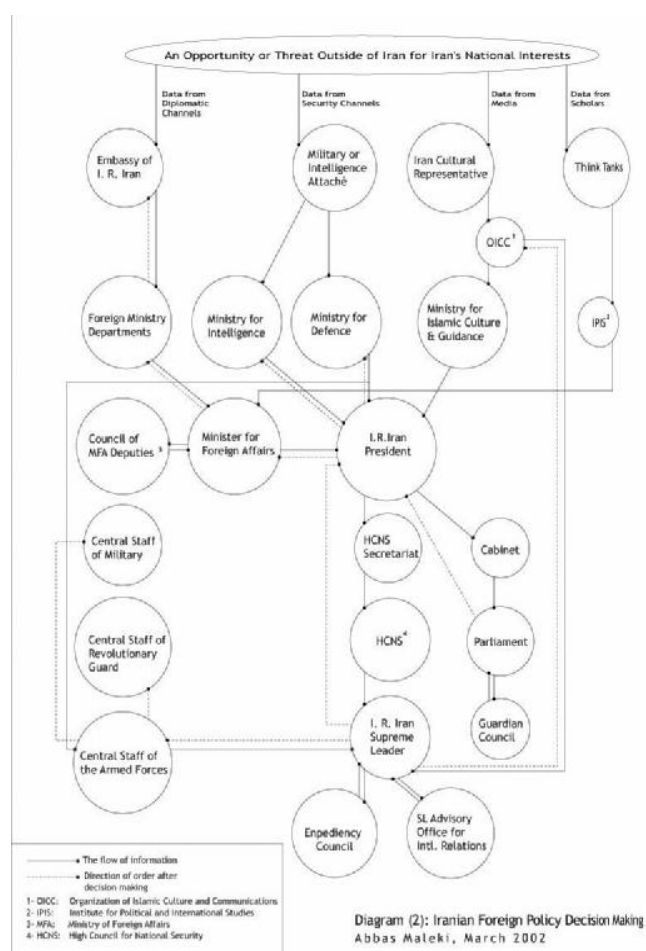
[The Foreign Minister] is empowered to act on some cases within the broad parameters of Iranian national policy and interests. However, for major events, the Foreign Minister reports directly to the President, who decides whether the case warrants action by the Cabinet of Ministers or by the High Council on National Security (HCNS). When a case has different economic, cultural, political, and social dimensions, the President sends the report to the Cabinet to ascertain the views of different Ministers, with the exception that the purely diplomatic, security and defense cases are sent to the HCNS Secretariat. For the latter types of cases, the Secretary of HCNS would present them in the main session after preparing the background of the cases. After the Council decides on a course of action, then the Iranian President, who is also the head of the HCNS, would send the report to the Iranian Supreme Leader. If the Leader confirms the action, then it would be operationalized and sent to military sections, and to the Foreign Ministry. [39]

Figure 4: Iranian Foreign Policy Decision Making

This Critical Requirements analysis stops short at analyzing the political aspects of Iranian decision-making. Further analysis should include such other details as the capabilities and motivations of Iranian security elements, her business leaders, her educational enterprises,

and other bodies influential in Iranian politics. From this analysis, however, we see elements of heuristic and bureaucratic models that present vulnerabilities.

Critical Vulnerabilities

From our critical capabilities analysis, a combination of multi-actor and single actor decision cycles emerges.   The Foreign Minister directly controls minor events while major events would require President or Supreme Leader intervention. Some historical events considered major that were directed by the Supreme Leader include, "(1) Iran's stance of neutrality during the allied attack on Iraq in 1991; (2) the nonintervention in Afghan internal affairs (even after the killing of nine Iranian diplomats in Mazar-e Sharif by the Taliban in 1998); and (3) the support of the Palestinians in the Arab-Israeli conflict."[40] The offices of the President and Foreign Minister would handle such events as deciding relations between Iran and other countries, enacting trade agreements, and other lower-level diplomatic efforts. While further analysis is required to outline those events considered minor or major, analysts can begin to define areas where influence can be exerted. By varying the degree of escalation in a scenario, US policy-makers can drive a decision-process toward the various echelons of power potentially creating division and uncertainty or at least slowing the decision cycle as various steps in the decision process are enacted. While differences among decision levels provides a target, rifts within a single decision-making level provide another potential source of friction.

In his speeches Khamenei regularly mentions many familiar themes of the 1979 revolution: justice, independence, self-sufficiency, fundamentalist Islamic government and resolute opposition to Israel and United States, while rarely mentioning other revolutionary ideals such as democracy and greater government transparency.[41] By leveraging those legislative bodies with differing views, planners may exploit those differences in opinion to

create conflict within the Iranian system. Identifying and influencing those parties that either share a view aligned with US intentions or, at least, shares a view counter-productive to some undesired Iranian viewpoint, US policy-makers can influence Iran's ability to make a decision, or perhaps even influence the outcome of the decision itself.

Conclusion

The unending quest to get inside our adversaries decision cycle is one of the fundamental truths to military conflict. The distinguishing features of individual actors and their relative influence upon other actors must be clearly understood. This paper answered two basic questions in furthering the debate over decision making analysis. The first question is whether the time and effort required for such analysis leads to any tangible benefit and if it does, then what model might lead planners to a viable understanding of an adversary.

For planners and leaders to formulate plans in dealing with adversaries, at least a basic understanding of their decision-loop is necessary. This step is often either summarily addressed or completely disregarded during the mission analysis phase of planning and yet often forms a critical basis for further planning. Planners rarely have direct access to subject matter experts and routinely inject personal biases into their assumptions on enemy actions. Mirror-imaging, stereotyping, and other errors lead to false assumptions leading to equally faulty solutions. Increased emphasis during the mission analysis is necessary in order to reduce as much as possible the fog of war. Conversely, basing plans on faulty data unnecessarily increased fog and friction as plans will require large-scale changes in order to conform to reality. From course of action development to wargaming to detailed planning, all phases of the planning cycle rely on this assessment being as accurate as possible.

If the reader accepts that accurate decision-making analysis yields a benefit to planning then what model is useful for planners? This paper recommends a structure based on Dr. Kem's center of gravity analysis model that is scalable to meet the needs of planners at various levels. By starting with the documented command and coordination relationships, one can establish a basic understanding of formal processes. By analyzing documented processes with real-world historical actions, one can assess how strictly those processes are followed and can expand the analysis to include some of the informal and secondary sources of information for the decision-maker. Further trend analysis can help determine the leader's interests. By determining those items or ideas that a leader holds dear, planners may be able to highlight areas where a leader's vital interests differ from those of his population, other leaders, or other world leaders. Exploiting these fissures provide a primary target for the campaign plan. Finding the exploitation vehicle or influence vector may highlight a center of gravity for the belligerent.

Decision-making analysis is not a new idea. The rational versus cognitive decision-making debate is ongoing for decades. This paper is an attempt to begin discussion on models useful to planners with relatively little international-relations experience who are still required to make such decisions. Based on growing capabilities for exploiting intelligence data, the author recommends expansion and refinement of the critical-factors methodology for analyzing decision-making frameworks as a tool for operational-level planners.

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